

Research Paper :

Performance evaluation of soil and water conservation structures in Darakwadi watershed

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ABSTRACT

Darakwadi watershed was developed by 'Dilasa Janvikas Pratishthan', Aurangabad (Maharashtra). In this various soil and water conservation structures; continuous contour trenches(CCT), earthen gully plugs(EGP), earthen nala bunds (ENB), composite cement nala bund(CCNB), gabion cum wall (GCW), cement check dam(CCD) and percolation tank (PT) were constructed. The present study was under taken to know the impact of soil and water conservation structures on crop production and rural community in the watershed. Silt deposition in the CCT, EGP, ENB, permanent structures (CCNB, GCW and CCD) and percolation tank was found to be 619.87 tones, 32.76 tones, 1291.96 tones, 1356.4 tones and 1307.53 tones, respectively. An average reduction in storage capacity of EGP, ENB, permanent structures (CCNB, GCW, CCD) and percolation tank was found to be 3.55%, 7.76%, 7.62% and .02%, respectively. Increase in area under cultivation, pasture and forest was found to be 6.19% and 1.49 %, respectively. Increase in area under cultivation during *Kharif*, *Rabi* and summer season was found to be 7.96 %, 7.43 % and 2.48 %, respectively during post development period.

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Land and water are the most precious heritage and physical base of biomass production. Major source of water for dry land agriculture is the rainfall received from south west monsoon during the period from June to September, which is erratic in nature, unevenly distributed and sometimes it is inadequate to meet the soil moisture requirement of crops. Watershed development is the only way to make efficient and judicious use of rain water (Gore *et al.*, 2000; Rathod and Ingole, 2002).

The Darakwadi watershed has been developed by 'Dilasa Janvikas Pratishthan', Aurangabad (Maharashtra) in the year 2002-03. Major activities under taken in this watershed were continuous contour trenches (CCT), earthen gully plugs (EGP), earthen nala bunds (ENB), composite cement nala bund, gabion cum wall (GCW), cement check dam (CCD) and percolation tank (PT). So far efficient water management is concerned, its performance is needed to be evaluated.

METHODOLOGY

Measurement of silt deposition:

The data on silt deposition *i.e.* depth of silt deposited in the storage area, were collected. For this, small pits were made in impounding area of the structure up to a depth of original ground surface at different locations and an average depth of silt was deposited was determined.

The area of silt deposited was measured by dividing

it into regular triangles and rectangles. Volume of silt deposited was measured by multiplying the area of silt deposition and depth of deposited. Weight of silt deposited was calculated by multiplying the volume of silt by bulk density of silt. The bulk density of silt was found to be 1.25 gm/cc.

Socio-economic study:

The socio-economic study was carried out in the Darakwadi watershed to assess the impact of the watershed development programme on village peoples and farming system. The data pertaining to the socio-economic conditions of the farmers by personnel interview method on various aspects such as land use pattern, cropping pattern etc. these data were compared with predevelopment data.

RESULTS AND DISCUSSION

Silt deposition in various soil and water conservation structures have been discussed in the following points.

Continuous contour trenches (CCT):

The data on silt deposition are tabulated in Table 1, which reveals that total 619.87 tones of silt has been arrested in the trenches over the period of two years after the construction of continuous contour trenches.